

# Specialty Lubricants

## MOLYKOTE® G-Rapid Plus Solid lubricant paste

### FEATURES

- Low friction coefficient
- High pressure-absorption capacity
- Prevents seizure and scoring
- Suppresses stick-slip
- Reduces formation of fretting corrosion
- Facilitates disassembly
- Good coverage
- Provides emergency running performance

### COMPOSITION

- Mineral oil
- Solid lubricants

**Solid lubricating paste with particularly low friction coefficient for assembly and running-in of metallic components**

### APPLICATIONS

- Suitable for the press-fit production of all types of machine elements, as a running-in lubricant for new machines and gears, as permanent lubrication of machine elements which are submitted to slight or intermittent movement only, as well as for drilling, sawing and thread-cutting.
- Used to lubricate threaded spindles, splined shafts, tooth gearing, worm gearing, moving screws, fittings, pumps, guides on machine tools, as well as for fitting ball and roller bearings, pulleys, wheel flanges and bolts.

### TYPICAL PROPERTIES

Specification writers: These values are not intended for use in preparing specifications. Please contact your local Dow Corning sales representative prior to writing specifications on this product.

Standard*	Test	Unit	Result
	Color		Black
	<b>Consistency, density</b>		
	Unworked penetration	mm/10	255-275
	Density at 20°C (68°F)	g/ml	1.40
	<b>Temperature</b>		
	Service temperature range	°C	-35 to +450
		°F	-31 to +842
	<b>Load-carrying capacity</b>		
DIN 51 350 pt.4	Four-ball tester		
	Weld load	N	5300
	Almen Wieland machine OK load	N	>20000
	<b>Coefficient of friction</b>		
	In bolted connection M12, 8.8 with blackened surface (Erichsen tester),		
	- μ thread		0.10
	- μ head		0.06
	Press-Fit test, μ		0.05, no chatter
	<b>Resistance</b>		
DIN 51 807 pt.1	Water resistance, static, evaluation		1-90

\* DIN: Deutsche Industrie Norm

### HOW TO USE

#### How to apply

Clean the sliding surfaces or contact areas, then apply paste with a brush, cloth, synthetic sponge or window leather. Do not use in excess as with

grease lubrication. Vigorous rubbing into metal surface will improve adhesion. Do not mix with greases or oils.

## **HANDLING PRECAUTIONS**

Product safety information required for safe use is not included. Before handling, read product and safety data sheets and container labels for safe use, physical and health hazard information. The material safety data sheet is available on the Dow Corning website at [www.dowcorning.com](http://www.dowcorning.com). You can also obtain a copy from your local Dow Corning sales representative or Distributor or by calling your local Dow Corning Global Connection.

## **USABLE LIFE AND STORAGE**

When stored at or below 20°C (68°F) in the original unopened containers, this product has a usable life of 60 months from the date of production.

## **PACKAGING**

This product is available in different standard container sizes. Detailed container size information should be obtained from your nearest Dow Corning sales office or Dow Corning distributor.

## **LIMITATIONS**

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

## **HEALTH AND ENVIRONMENTAL INFORMATION**

To support Customers in their product safety needs, Dow Corning has an extensive Product Stewardship organization and a team of Product Safety and Regulatory Compliance (PS&RC) specialists available in each area.

For further information, please see our website, [www.dowcorning.com](http://www.dowcorning.com) or consult your local Dow Corning representative.

## **LIMITED WARRANTY INFORMATION - PLEASE READ CAREFULLY**

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer's tests to ensure that Dow Corning's products are safe, effective, and fully satisfactory for the intended end use. Suggestions of use shall not be taken as inducements to infringe any patent.

Dow Corning's sole warranty is that the product will meet the Dow Corning sales specifications in effect at the time of shipment.

Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted.

## **DOW CORNING SPECIFICALLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY.**

## **DOW CORNING DISCLAIMS LIABILITY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.**

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# DOW CORNING CORPORATION

## Material Safety Data Sheet

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Version: 1.5

Revision Date: 2008/04/18

### MOLYKOTE(R) G-RAPID PLUS SPRAY

#### 1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

Dow Corning Corporation  
South Saginaw Road  
Midland, Michigan 48686

**24 Hour Emergency Telephone: (989) 496-5900**

Customer Service: (989) 496-6000

Product Disposal Information: (989) 496-6315

CHEMTREC: (800) 424-9300

MSDS No.: 01685392

Revision Date: 2008/04/18

Generic Description: Molybdenum disulfide aerosol

Physical Form: Aerosol

Color: Black

Odor: Solvent odor.

NFPA Profile: Health 2 Flammability 4 Instability/Reactivity 0

Note: NFPA = National Fire Protection Association

#### 2. HAZARDS IDENTIFICATION

##### POTENTIAL HEALTH EFFECTS

##### Acute Effects

Eye: Direct contact may cause mild irritation.

Skin: May cause mild irritation.

Inhalation: Vapor and/or mist may irritate nose and throat. Overexposure by inhalation may cause drowsiness, dizziness, confusion or loss of coordination.

Oral: Low ingestion hazard in normal use.

##### Prolonged/Repeated Exposure Effects

Skin: Repeated or prolonged contact may cause defatting and drying of skin which may result in skin irritation and dermatitis.

Inhalation: Exposures to high concentrations may cause cardiac sensitization. Overexposure by inhalation may injure the following organ(s): Nervous system.

Oral: No known applicable information.

##### Signs and Symptoms of Overexposure

No known applicable information.

##### Medical Conditions Aggravated by Exposure

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No known applicable information.

The above listed potential effects of overexposure are based on actual data, results of studies performed upon similar compositions, component data and/or expert review of the product. Please refer to Section 11 for the detailed toxicology information.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

<u>CAS Number</u>	<u>Wt %</u>	<u>Component Name</u>
106-97-8	30.0 - 60.0	Butane
64742-48-9	15.0 - 40.0	Hydrotreated heavy petroleum naphtha
1305-62-0	5.0 - 10.0	Calcium hydroxide
74-98-6	5.0 - 10.0	Propane

The above components are hazardous as defined in 29 CFR 1910.1200.

**4. FIRST AID MEASURES**

Eye:	Immediately flush with water for 15 minutes.
Skin:	Remove from skin and wash thoroughly with soap and water or waterless cleanser. Get medical attention if irritation or other ill effects develop or persist.
Inhalation:	Remove to fresh air. Get immediate medical attention.
Oral:	No first aid should be needed.
Notes to Physician:	Treat according to person's condition and specifics of exposure.

**5. FIRE FIGHTING MEASURES**

Flash Point:	Not applicable.
Autoignition Temperature:	Not determined.
Flammability Limits in Air:	Not determined.
Extinguishing Media:	On large fires use dry chemical, foam or water spray. On small fires use carbon dioxide (CO <sub>2</sub> ), dry chemical or water spray. Water can be used to cool fire exposed containers.
Fire Fighting Measures:	Self-contained breathing apparatus and protective clothing should be worn in fighting large fires involving chemicals. Use water spray to keep fire exposed containers cool. Determine the need to evacuate or isolate the area according to your local emergency plan.

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**Unusual Fire Hazards:** Vapors are heavier than air and may travel to a source of ignition and flash back. Static electricity will accumulate and may ignite vapors. Prevent a possible fire hazard by bonding and grounding or inert gas purge.

**6. ACCIDENTAL RELEASE MEASURES**

**Containment/Clean up:** Remove possible ignition sources. Determine whether to evacuate or isolate the area according to your local emergency plan. Observe all personal protection equipment recommendations described in Sections 5 and 8. Local, state and federal laws and regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which federal, state and local laws and regulations are applicable. Sections 13 and 15 of this MSDS provide information regarding certain federal and state requirements.

**Note:** See section 8 for Personal Protective Equipment for Spills. Call (989) 496-5900, if additional information is required.

**7. HANDLING AND STORAGE**

Use with adequate ventilation. Avoid eye contact. Avoid skin contact. Do not breathe mist. Keep container closed.

Contents under pressure. Do not store above 120F/49C or in direct sunlight. Static electricity will accumulate and may ignite vapors. Prevent a possible fire hazard by bonding and grounding or inert gas purge. Keep container closed and away from heat, sparks, and flame.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION****Component Exposure Limits**

<u>CAS Number</u>	<u>Component Name</u>	<u>Exposure Limits</u>
106-97-8	Butane	OSHA PEL (final rule): TWA 800 ppm, 1900 mg/m <sup>3</sup> . ACGIH TLV: TWA 1000 ppm.
64742-48-9	Hydrotreated heavy petroleum naphtha	Observe petroleum distillates limits. OSHA PEL (final rule): TWA 400 ppm.
1305-62-0	Calcium hydroxide	ACGIH TLV: TWA 5 mg/m <sup>3</sup> .
74-98-6	Propane	OSHA PEL (final rule): TWA 1000 ppm, 1800 mg/m <sup>3</sup> . ACGIH TLV: TWA 1000 ppm.

**Engineering Controls**

**Local Ventilation:** Recommended.

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General Ventilation: Recommended.

**Personal Protective Equipment for Routine Handling**

Eyes: Use proper protection - safety glasses as a minimum.

Skin: Wash at mealtime and end of shift. Contaminated clothing and shoes should be removed as soon as practical and thoroughly cleaned before reuse. Chemical protective gloves are recommended.

Suitable Gloves: Neoprene Rubber(R). Polyvinylalcohol. Nitrile Rubber. Polyvinylchloride. Viton(R). Silver Shield(R). 4H(R).

Inhalation: Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. IH personnel can assist in judging the adequacy of existing engineering controls.

Suitable Respirator: General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators.

**Personal Protective Equipment for Spills**

Eyes: Use full face respirator.

Skin: Wash at mealtime and end of shift. Contaminated clothing and shoes should be removed as soon as practical and thoroughly cleaned before reuse. Chemical protective gloves are recommended.

Inhalation/Suitable Respirator: Respiratory protection recommended. Follow OSHA Respirator Regulations (29 CFR 1910.134) and use NIOSH/MHSA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Precautionary Measures: Avoid eye contact. Avoid skin contact. Do not breathe mist. Keep container closed. Use reasonable care.

Comments: When heated to temperatures above 150 degrees C in the presence of air, product can form formaldehyde vapors. Formaldehyde is a potential cancer hazard, a known skin and respiratory sensitizer, and an irritant to the eyes, nose, throat, skin, and digestive system. Safe handling conditions may be maintained by keeping vapor concentrations within the OSHA Permissible Exposure Limit for formaldehyde.

Note: These precautions are for room temperature handling. Use at elevated temperature or aerosol/spray applications may require added precautions.

**MOLYKOTE(R) G-RAPID PLUS SPRAY****9. PHYSICAL AND CHEMICAL PROPERTIES**

Physical Form: Aerosol  
Color: Black  
Odor: Solvent odor.  
Specific Gravity @ 25°C: 0.74  
Viscosity: Not determined.  
Freezing/Melting Point: Not determined.  
Boiling Point: Not determined.  
Vapor Pressure @ 25°C: Not determined.  
Vapor Density: Not determined.  
Solubility in Water: Not determined.  
pH: Not determined.  
Volatile Content: Not determined.  
Flash Point: Not applicable.  
Autoignition Temperature: Not determined.  
Flammability Limits in Air: Not determined.

Note: The above information is not intended for use in preparing product specifications. Contact Dow Corning before writing specifications.

**10. STABILITY AND REACTIVITY**

Chemical Stability: Stable.  
Hazardous Polymerization: Hazardous polymerization will not occur.  
Conditions to Avoid: None.  
Materials to Avoid: Oxidizing material can cause a reaction.

Hazardous Decomposition Products

Thermal breakdown of this product during fire or very high heat conditions may evolve the following decomposition products: Carbon oxides and traces of incompletely burned carbon compounds. Metal oxides. Sulfur oxides. Formaldehyde.

**11. TOXICOLOGICAL INFORMATION****Special Hazard Information on Components**

No known applicable information.

**12. ECOLOGICAL INFORMATION**

**MOLYKOTE(R) G-RAPID PLUS SPRAY****Environmental Fate and Distribution**

Complete information is not yet available.

**Environmental Effects**

Complete information is not yet available.

**Fate and Effects in Waste Water Treatment Plants**

Complete information is not yet available.

## Ecotoxicity Classification Criteria

Hazard Parameters (LC50 or EC50)	High	Medium	Low
Acute Aquatic Toxicity (mg/L)	<=1	>1 and <=100	>100
Acute Terrestrial Toxicity	<=100	>100 and <= 2000	>2000

This table is adapted from "Environmental Toxicology and Risk Assessment", ASTM STP 1179, p.34, 1993.

This table can be used to classify the ecotoxicity of this product when ecotoxicity data is listed above. Please read the other information presented in the section concerning the overall ecological safety of this material.

**13. DISPOSAL CONSIDERATIONS****RCRA Hazard Class (40 CFR 261)**

When a decision is made to discard this material, as received, is it classified as a hazardous waste? Yes

Characteristic Waste:

Ignitable: D001

State or local laws may impose additional regulatory requirements regarding disposal. Call (989) 496-6315, if additional information is required.

**14. TRANSPORT INFORMATION****DOT Road Shipment Information (49 CFR 172.101)**

Proper Shipping Name: Consumer Commodity

Hazard Class: ORM

Hazard Label(s): ORM-D (Other Regulated Materials)

**Ocean Shipment (IMDG)**

Proper Shipping Name: AEROSOLS

Hazard Class: 2.1

**MOLYKOTE(R) G-RAPID PLUS SPRAY**

UN/NA Number: UN 1950

**Air Shipment (IATA)**

Proper Shipping Name: Aerosols, flammable

Hazard Class: 2.1

UN/NA Number: UN 1950

Hazard Label(s): Flammable Gas

Apply Gross Weight Supplemental Label to Outer Package

Call Dow Corning Transportation, (989) 496-8577, if additional information is required.

**15. REGULATORY INFORMATION**

Contents of this MSDS comply with the OSHA Hazard Communication Standard 29 CFR 1910.1200.

TSCA Status: All chemical substances in this material are included on or exempted from listing on the TSCA Inventory of Chemical Substances.

**EPA SARA Title III Chemical Listings****Section 302 Extremely Hazardous Substances (40 CFR 355):**

None.

**Section 304 CERCLA Hazardous Substances (40 CFR 302):**

None.

**Section 311/312 Hazard Class (40 CFR 370):**

Acute: Yes

Chronic: Yes

Fire: Yes

Pressure: Yes

Reactive: No

**Section 313 Toxic Chemicals (40 CFR 372):**

None present or none present in regulated quantities.

Note: Chemicals are listed under the 313 Toxic Chemicals section only if they meet or exceed a reporting threshold.

**Supplemental State Compliance Information****California**

## MOLYKOTE(R) G-RAPID PLUS SPRAY

Warning: This product contains the following chemical(s) listed by the State of California under the Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) as being known to cause cancer, birth defects or other reproductive harm.

None known.

**Massachusetts**

<u>CAS Number</u>	<u>Wt %</u>	<u>Component Name</u>
106-97-8	30.0 - 60.0	Butane
1317-33-5	7.0 - 13.0	Molybdenum disulfide
1305-62-0	5.0 - 10.0	Calcium hydroxide
74-98-6	5.0 - 10.0	Propane
7782-42-5	3.0 - 7.0	Graphite

**New Jersey**

<u>CAS Number</u>	<u>Wt %</u>	<u>Component Name</u>
106-97-8	30.0 - 60.0	Butane
64742-48-9	15.0 - 40.0	Hydrotreated heavy petroleum naphtha
8042-47-5	10.0 - 30.0	Mineral oil
1317-33-5	7.0 - 13.0	Molybdenum disulfide
1305-62-0	5.0 - 10.0	Calcium hydroxide
74-98-6	5.0 - 10.0	Propane

**Pennsylvania**

<u>CAS Number</u>	<u>Wt %</u>	<u>Component Name</u>
106-97-8	30.0 - 60.0	Butane
64742-48-9	15.0 - 40.0	Hydrotreated heavy petroleum naphtha
8042-47-5	10.0 - 30.0	Mineral oil

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1317-33-5	7.0 - 13.0	Molybdenum disulfide
1305-62-0	5.0 - 10.0	Calcium hydroxide
74-98-6	5.0 - 10.0	Propane
7782-42-5	3.0 - 7.0	Graphite

**16. OTHER INFORMATION**

Prepared by: Dow Corning Corporation

These data are offered in good faith as typical values and not as product specifications. No warranty, either expressed or implied, is hereby made. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable. However, each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate.

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